Volunteer Lake Assessment Program Individual Lake Reports

CHALK POND, NEWBURY, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	339	**Max. Depth (m):**	3.7	**Flushing Rate (yr^{-1}):**	4.6
Surface Area (Ac.):	21	**Mean Depth (m):**	2	**P Retention Coef:**	0.56
Shore Length (m):	1,600	**Volume (m^3):**	166,500	**Elevation (ft):**	1252

TROPHIC CLASSIFICATION

Year	Trophic class
1986	OLIGOTROPHIC
2006	MESOTROPHIC

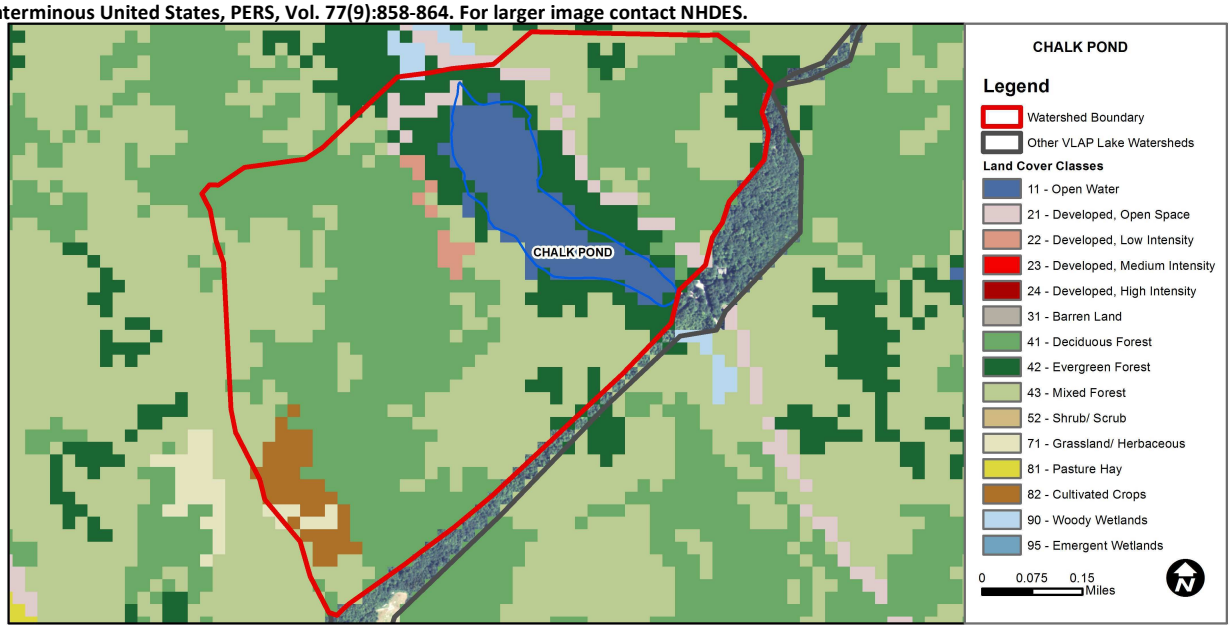
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	8.56	Barren Land	0	Grassland/Herbaceous	0.47
Developed-Open Space	2.67	Deciduous Forest	40.51	Pasture Hay	0
Developed-Low Intensity	1.02	Evergreen Forest	12.09	Cultivated Crops	3.3
Developed-Medium Intensity	0	Mixed Forest	31.79	Woody Wetlands	0
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	0

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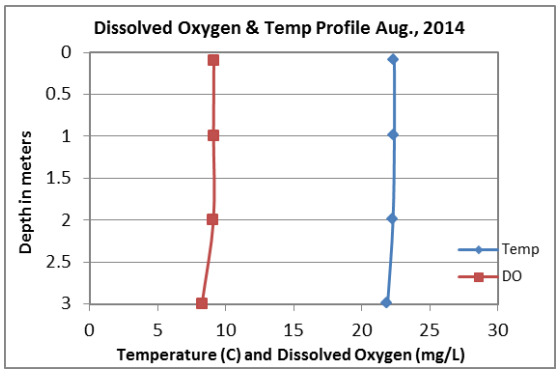
2014 Data Summary

Observations and Recommendations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels were slightly above average for the pond, greater than the state median, and increased from 2013. Historical trend analysis indicates highly variable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Deep spot and Outlet conductivity level were approximately equal to the state median and average for most NH lakes. However, historical trend analysis indicates significantly increasing (worsening) epilimnetic (upper water layer) conductivity since monitoring began. Inlet conductivity was low.
- **E. coli:** Beach E. coli levels were very low in August and much less than the state standard of 88 cts/100 mL for public beaches.
- **Total Phosphorus:** Deep spot phosphorus levels were very low in August and much less than the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years. Inlet and Outlet phosphorus levels were also very low.
- **Transparency:** Transparency was very good in August and the Secchi disk was visible on the pond bottom with the viewscope (VS). However, historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began.
- **Turbidity:** Deep spot turbidity increased slightly from 2013 likely due to the increase in algal growth. Inlet and Outlet turbidities were low in August.
- **pH:** Deep spot, Inlet and Outlet pH levels were less than desirable range 6.5—8.0 units. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years.
- **Recommended Actions:** The worsening conductivity and transparency trends are concerning. The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff from paved roads, dirt/gravel roads, construction areas, steep slopes, lake and watershed properties. DES' "NH Homeowner's Guide to Stormwater Management" is a great resource for homeowners. Encourage local road agents and winter maintenance companies to obtain a NH Voluntary Salt Applicator License through UNH's Technology Transfer Center's Green SnowPro Certification program. Keep up the great work!



NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

Station Name	Table 1. 2014 Average Water Quality Data for CHALK POND								
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	3.00	4.69	48.3		6	2.90	3.50	1.04	6.44
Hypolimnion			47.9		6			1.04	6.41
Inlet			17.7		3			0.25	6.17
Main Beach				2					
Outlet			48.5		5			0.75	6.45
South Beach				10					

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Worsening	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data highly variable.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Worsening	Data significantly decreasing.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.